A STUDY OF CREATIVITY AT JUNIOR AND SENIOR HIGH LEVELS OF TEACHER AND STUDENT IN RELATIONSHIP TO QUALITY OF ART WORK PRODUCED BY STUDENTS

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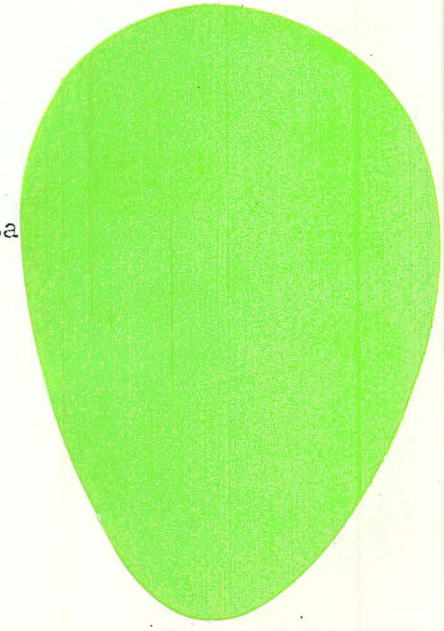

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CHAPTER I

INTRODUCTION

Man has been able to prolong his life, make material strides, uncover awe-inspiring mysteries of the universe and, thus earn for himself a feeling of accomplishment in his ever-probing, curious, and imaginative mind. But he needs to probe individual endeavors for he cannot adapt himself to the ever changing environment. Victor Lowenfeld appropriately stated: "Scientifically, we can communicate with any part of the globe within split seconds; socially we cannot even reach our neighbors." (1)

Educators are developing an increasing simplicity towards education trends as a way of preparing the individual in an ever changing world. This world demands creative thinking. Because of this change, emphasis is being placed upon education to promote creativity within our educational system. It is the opinion of many that the average person is being denied the opportunities of using his creative powers to perceive, imagine, explore and invent.

It is than the task of this study to explore the relationship of the measured creativity of teaching personnel in art to the measured creativity of the pupils in the respective teachers' classes.

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(1) Yochim, Louise --- "PERCEPTUAL GROWTH IN CREATIVITY" Pennsylvania: International Textbook Company-1967, pp. 17-21.

Purpose of Study

The purpose of this study is to examine possible relationships between the creative levels of the teacher and students as measured by the Torrance Test of Creative Thinking, Figural Test A, and to determine if the creative levels of the teacher and students are significantly related and have an effect upon the qualities of the art produced.

Justification of Study

Educators are developing an awareness of the fact that education must be able to prepare the individual for an ever changing world by placing emphasis upon creative thinking. Stress is being placed upon schooling and formal education to promote creativity within our educational systems.

The changes that have occured still reflect tradition and the authoritative type educational process in the view of certain writers. Linderman and Herberholz in their book, DEVELOPING ARTISTIC AND PERCEPTUAL AWARENESS, aptly expressed this change.

> In a highly standardized, mechanistic society loss of human rights and dignities is threatened by a lact of the individual's opportunities to create. Individual innovation is being replaced by a mass-mediocre-mindedness. (2)

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(2) Linderman, Earl W., Herberholz, Donald W. --- "DEVELOPING ARTISTIC AND PERCEPTUAL AWARENESS" Dubuque, Iowa: Wm. C. Brown Company-1964, p. 9.

The today's student is being denied the opportunities of using his many powers to perceive, imagine, explore and invent. Further support was stated by John W. Gardner in his book, SELF RENEWAL.

> For the self-renewing man the development of his own potentialities and the process of self-discovery never end. Exploration of the full range of his potentialities is something he pursues systematically, or at least avidly, to the end of his days. He looks forward to an endless and unpredictable dialogue between his potentialities and the claims of life - not only the claims he encounters but the claims he invents. And by potentialities I mean not just skills, but the full range of his capacities for sensing, wondering, learning, understanding, loving and aspiring. (3)

Relative to education and the learning process, creativity is thought to play an important role in the total individual development. For as Herbert Read suggests, this is a "...need to teach children not only to know, but also to create, for art is a way to become a sensitive, aesthetically oriented person." (4)

The individual teacher places a personal emphasis upon relevance, motivation and self-disipline. Therefore, the more creative a teacher can be in the development of these characteristics, the more positive influence he will have on the students involved in the program. Linderman and Herberholz also

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(3) Gardner, Jown W. --- "SELF RENEWAL" Harper Colophon Books, New York: Harper and Row Publishing Company-1965, pp. 10-12.

(4) Read, Herbert --- "EDUCATION THROUGH ART" New York: Pantheon Books-1943, p. 10.

commented that an "...art teacher is someone who can translate the essence of art into linquistics that children can discover at their particular developmental level." (5)

Research Method

In order to determine the possible relationship of creativity at both the teacher and student levels and its affect upon the quality of art produced, a sampling of those characteristics pertinent to creativity is necessary. The Torrance Test of Creative Thinking, Figural Form A, will be used to sample four areas - fluency, flexibility, originality and elaboration.

This test will be scored by five evaluators using Torrance's Directions and Scoring Guide for Figural Form A, Research Edition.

Data obtained will be analyzed to ascertain whether there seems to be a relationship between the creativity of the teacher and subsequent creativity on the part of students.

This study will compare the above data with a survey evaluating two-dimensional art work within three senior high schools.

Limitations of Study

Significant limitation within this study are:

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(5) Linderman, Earl W., Herberholz, Donald W. --- "DEVELOPING ARTISTIC AND PERCEPTUAL AWARENESS" Dubuque, Iowa: Wm. C. Brown Company-1964, p. 6.

1) population sampled included only students enrolled in art programs in grades 7 to 12 as of May 21, 1970.

2) the Torrance Test, Figural Test A, was administered in a group test setting.

3) tests were administered within a one-week period prior to the closing of school, May 29, 1970.

4) a random sampling was used (one out of every four students sampled was evaluated).

Importance of Study

In order to obtain a more complete understanding of the factors involved in creativity, it is essential that an attempt be made through sampling creative abilities of both the teacher and their students to further undersrand the effect that creativity has upon art produced within the program.

CHAPTER II

REVIEW OF RELEVANT LITERATURE

Introduction

This chapter will present a selective review of the relevant literature and studies significant to this paper.

The Term Creativity

In its simplest form creativity refers to ideas, feelings, expression along with learning, thinking and perceiving which are segments of problem solving. Martin Buber, in an address delivered at the International Conference held at Heidelberg, 1925, stated "...there exists in all men a distinct impulse to make things, an instinct which cannot be explained by theories of libido or will to power, but is disinterestedly experimental." (6)

Further theory relative to the natural abilities of man can be found in a study of Genius by Francis Galtan, published in 1869:

> Genius is that which leads an individual to rise above his fellows, by his own creative effort. Man's natural abilities are derived by his inheritance, under exactly the same limitations as are the form and physical features of the whole organic world. (7)

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(6) Read, Herbert --- "EDUCATION THROUGH ART" New York: Pantheon Books-1943, p. 279.

(7) Yochim, Louis --- "PERCEPTUAL GROWTH IN CREATIVITY" Penssylvania: International Textbook Company-1967, pp. 43-44.

As pointed out, early writers were concerned in the natural abilities possessed by man in relationship to their environment. Present day concern is the awakening and enriching those natural endowments and thinking of creativeness as a special way of problem solving. Donald MacKinnon stated in 1968, that:

> the creative individual has revealed himself... in his high level of effective intelligence, his openness to experience, his esthetic sensitivity, his independence in thought and action, his high level of creative energy and his increasing striving for solutions to the ever more difficult problems that he constantly sets for himself. (8)

In examining creativity within the arts, Allan Kapron in his research project THE CREATION OF ART AND CREATIONS OF ART EDUCATION speculates that creativity may be the artist's:

1) particular itch, bugginess, obsession, neurosis or whatever name one wants to give it;

2) knowledge of existing alternatives of action, historical and contemporary;

3) continuing sense of discovery in what he does and continuing sense of confirmation of suppositions and intinations he has had all along;

4) sensitivity to day-by-day opinion, voiced by colleagues, critics, public and family;

5) feeling of being someone special: a seer, prophet, elected victim of society, philosopher, moralist, priest; (9)

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(8) MacKinnon, Donald --- "WHAT MAKES A PERSON CREATIVE?" Saturday Review-February 1968, pp. 15-17.

(9) Kapron, Allan --- "THE CREATION OF ART AND THE CREATION OF ART EDUCATION" Cooperative Research Project V-0002 Seminar in Art Education for Research and Curriculum Development Pennsylvania State University-1966, pp. 74-75.

In support of creativity within the arts, Henri Matisse refers to his personal experience as follows:

> I put down my tones without preconceived ideas. If at first, and without perhaps knowing it, a tone has delighted or struck me, I usually find when I have finished my picture that I have respected that tone, whereas I have gradually modified and transformed all the others. The expressive qualities of colours impress me purely instinctively. To paint an autum landscape, I should not try to remember what colours were proper to that season, I should only be inspired by the sensation they gave me: the icy purity of the sky, which is an acid blue, would express the season just as well as the colours of the leaves. My sensation itself can vary: autumn can be sweet and warm like a prolonging of summer, or conversely cool with a cold sky and lemon-yellow trees, which give an impression of cold and already foretell the winter. (10)

One must perceive that creativity falls into many facets of life and experiences. All individuals possess traits which involve the creative processes - feelings, experiences (both, visual and auditory), our continuing sense of discovery and increasing striving for solutions.

A more applicable definition in relationship to this study is given by Paul Torrance because he enables one to begin defining kinds of abilities, and personality characheristics that facilitate or inhibit the creative process. He defines creativity as:

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(10) Matisse, Henri --- "A PORTRAIT OF THE ARTIST AND THE MAN" New York: Frederick A. Praeger, Inc.-1960, p. 82.

> The process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies and identifying the difficulty; searching for solutions, making guesses, or formulating hypothesis about the deficiencies, testing and retesting these hypothesis and possibly modifying and retesting them finally communicating the results. (11)

It should be further noted that this definition describes a natural process which is in harmony with historical usage and is equally applicable in scientific, artistic, literary, dramatic and interpersonal creativity.

Studies cited

One of the first recorded incidents of a method of collecting data for the rating of individuals dates back to Leonardo DaVinci who designed what might be termed a test of creativity to aid in the selection of potential art students. He observed that the " 'physical and mental traits of his students were portrayed in the pictures they painted'." (12)

Prior to 1950 the term creativity was applied loosely and few studies were executed within creativity and creative sampling. J. P. Guilford in his inaugural address on "Creativity" to the American Psychological Association in 1950 stated:

> The neglect of this subject by psychologist is appalling. The evidences of neglect are so

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(11) Torrance, Paul --- "TORRANCE TESTS OF CREATIVE THINKING" Norms Technical Manual Research Edition. New Jersey: Personnal Press, Inc.-1966, p. 6.

(12) Hahn, Marshall --- "REVIEW OF RESEARCH ON CREATIVITY" Minnesota: Minnesota Research Coordination Unit, September 1968, p. 10-12.

> obvious that I need not give proof. But the extent of the neglect I had not realized until recently. To obtain a more tangible idea of the situation, I examined the index of the Psychological Abstracts for each year since its origin. Of approximately 121,000 titles listed in the past twenty-three years, only 186 were indexed as definitely bearing on the subject of creativity. (13)

Through many attempts in classifying the creative abilities, Guilford had formulated over one-hundred different traits significant to creativity, thus the sampling of creativity has become more prevelant.

Although many types of tests to measure creative thinking abilities have been developed, each piece of research has been an isolated experimental effort. The reason this type of research had questionable validity was:

1. Difficulties of criteria and validity.
2. A lack of understanding of the nature of creative thinking.
3. A lack of value placed on creative thinking ability by educators. (14)

During the late 1950's, the Creative Education Foundation underwrote an extensive scientific investigation at the University of Buffalo under the direction of the University Psychologists and Sidney J. Parnes. This investigation series was designed to evaluate "Creative Problem-solving Abilities" at the University

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(13) Parnes, Sidney --- "A SOURCE BOOK FOR CREATIVE THINKING" New York: Charles Scribner's Sons-1962, pp. 152-155.

(14) Torrance, Paul --- "GUIDING CREATIVE TALENTS" California: Prentice-Hall, Inc.,-1962, pp. 1-2, 38-39.

level, for a total of twelve hundred,(1200) day students and sixteen hundred,(1600) executives from business, government and education. Summary of findings are as follows:

1. Creative imagination can be deliberately developed.

2. Creative problem-solving courses can measurable improve the ability of students of average intelligence to produce good ideas, the criteria of quality being uniqueness and usefulness.

3. A systematic course of instruction in applied imagination can also produce significant gains in personality traits such as confidence, initiative and leadership potentials.

The findings indicated that on the creative tasts measured, the students-with-course studies in creative problem solving showed a 125 per cent superiority in ability to produce good ideas over students without the above course of study. This difference was subjected to statistical analysis and found to be highly significant. (15)

Another factor significant to creativity, established through the Getzels and Jackson Study (1958-1960), is IQ verses creativity. I. A. Taylor in 1959 supports creativity by stressing the fact "...intelligence is an invention of western cultures and selects and stresses the values important to our society."

> The significance of the above citing relates to the study by Getzels and Jackson (1958) in which groups of subjects identified as highly

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(15) Parnes, Sidney and Harding, Harold --- "A SOURCE BOOK FOR CREATIVE THINKING" New York: Charles Scribner's Sons-1962, pp. 185-191.

> intelligent (upper 20 per cent of group on traditional tests of intelligence or scholastic aptitude but not in the upper 20 per cent on tests of creative thinking) have been compared with their highly creative peers (upper 20 per cent on measures of creative thinking but not in upper 20 per cent on traditional measures of intelligence or scholastic aptitude). (16)

The above statement maintains that intelligence tests sample relatively unimportant problems and how fast they can be accomplished without errors. Wheras creativity sampling or individual acts of creativity are directly opposite to the factors stated in intelligence sampling. Individuals involved in intellectual activities use a minimal amount of their capabilities whereas the individual involved in creative activities utilizes total intellectual and sensory capabilities.

Studies related to the influence teachers have within the educational process tend to show that much of the teacher's evaluation of student behavior appears to be designed to enable the teacher to control or coerce conformity. Such evaluative behavior by the teacher is not likely to have a positive influence upon any kind of truly creative behavior. Some teachers, however, like Hearns (1941) have observed that:

> ...It is only when the child is convinced you are not trying to reform him that he is able to open up and behave creatively. (17)

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(16) Torrance, Paul --- "GUIDING CREATIVE TALENTS" California: Prentice-Hall, Inc.,-1962, pp. 18-19, 54-55

(17) Torrance, Paul --- "REWARDING CREATIVE TALENT" New Jersey: Prentice-Hall-1965, pp. 21-22.

Kearns found that when children realized he was there to enjoy and to share their productions "...They opened up a surprise box of truthful observation and offered wise deductions that belied their years." (18)

Much scattered evidence suggests that creative thinking flourishes most when students feel that the teacher is on their side. Handlin (1962) believes that:

> ...Having to give grades subjugates the teaching role. It destroys the intimacy of the relationship between the teacher and student. The student becomes afraid to turn to the teacher, fearing that he will be evaluated in the process. (19)

Fleming and Weintraub (1962) examined the relationship between rigidity and measures derived from the TORRANCE TESTS OF CREATIVE THINKING among a group of sixty-eight, (68) gifted elementary school children. Using a composite measure based on the Product Improvement, Unusual Uses, Ask and Guess, Circles, and Incomplete Figures. They found coefficient of correlation of -.41 (significant at better than the .01 level) between this measure and attitudinal rigidity as measured by the FRENKEL BRUNSWIK REVISED CALIFORNIA INVENTORY. The attitudinal rigidity score also correlated -.37, -.14, and -.32 with the originality, fluency, and flexibility scores respectively. (20)

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(18) Ibid, pp. 21-22.

(19) Ibid, pp. 21-22.

(20) Torrance, Paul --- "TORRANCE TESTS OF CREATIVE THINKING" Norms Technical Manual. New Jersey: Personnel Press Inc. 1966, pp. 26-27.

A great variety of studies has been made in measurement of the growth of creative abilities resulting from the exercise of those abilities through participation in creative activities of variour kinds. However there have been few studies that have given much dependable information about what kinds of motivations and attitudes of teachers affect specific kinds of growth of creative behavior in students. The research problem is a complex and difficult one. One of the more carefully conducted studies related to achievement, was done by McCardle (1959), which is a measure of teachers attitudes toward children. The study involved twenty-nine, (29) teachers and sixteen hundred and forty-three, (1643) pupils in first year algebra. Results were:

1) Teachers having the most favorable attitudes towards children, as measured by the Minnesota Teacher Attitude Inventory, achieved significantly higher gains on qualitative thinking and functional competence in mathematics.

2) There were no statistically significantly differences in pupil means on mechanics of elementary algebra.

3) The teachers high on the MTAI were apparently not so "textbook bound" as the teachers falling into the low and middle groups on this measure.

4) Therefore, pupils of the high MTAI teachers were better able to use what they had learned in the solution of problems. (21)

A study by Wodtke (1963) further substantiates the importance of the teacher's need or motivation to control children. Through observation techniques he identified elementary teachers as high

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(21) Ibid, p. 77.

controlling or low controlling. He then compared the creative thinking test gains of pupils of high controlling teachers to those of pupils of low controlling teachers. He found that the pupils of low controlling teachers achieved higher gains on verbal creativity and pupils of high controlling teachers achieved higher gains on non-verbal elaboration. He concluded that a high controlling teacher discourages "...self-initiated pupil talk, verbal creativity, and verbal flexibility, but tends to encourage increased detail, at least in drawings". (22)

At the Nebraska Symposium on Motivation in 1961, W. J. McKeachie from the University of Michigan presented a thought provoking resume of a study that he had completed. This article did not go into the specific details of the research design, but it was related to concepts involved in this study.

McKeachie would start with a student having a strong achievement motive where the teacher provides cues to standards of achievement and incentives for achievement. A situation like this arouses expectancies of achievement for the student; however, the strength of his motivation will be influenced by his estimate of his chances to achieve the standards set by the instructors.

Two students having strong achievement motives may select the same instrumental habits to achieve their goals. They may both do their homework, however if they differ in subjective probability

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(22) Ibid, p. 79.

of success, their motivation will differ; therefore differences in attentiveness and persistence may be expected.

McKeachie then went on to point out that frustration is likely to be created when the student finds that his expected satisfactions are not likely to be gained in a particular class. (23)

Paul Torrance points out that psychologists and sociologists have recognized in industry the process of "rate setting" and the negative sanctions brought against the "rate buster" by the work group. Educators likewise have been aware of the sanctions against the high achiever or "curve buster". Any degree of outstanding success seems to cut off the unique member from his group and the pressure generated against uniqueness tends to militate against high achievement.

Within the following study conducted by Paul Torrance, he notes that student groups do establish a varied repertoire of controls upon the most creative and that the most creative develop a varied repertoire of techniques of adaptation. (24)

This study used one hundred and twenty-five, (125) elementary school pupils, twenty-five, (25) of each grade level from second

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(23) McKeachie, M. J. --- "MOTIVATION TEACHING METHODS AND COLLEGE LEARNING" Nebraska Symposium on Motivation. Nebraska: University of Nebraska Press-1961, pp. 95-144.

(24) Torrance, Paul --- "EDUCATION AND THE CREATIVE POTENTIAL" Minnesota: University of Minnesota Press-1962, pp. 1190120.

through the sixth grade. Each class of twenty-five,(25) pupils was divided into five five-person groups. Groups were formed by ranking all pupils in each class on the basis of scores on a test of creative thinking administered in a previous study and placing in each group one of the five most creative, one of the next five, to the least creative.

The focus of observations was on the techniques used by the group to control the most creative member and his method of adaptation. Rather clear evidence of pressure against the most creative member was found in each of the twenty-five,(25) groups studied.

1. A majority (68 per cent) of the most creative initiated more ideas than any other member of the group, just as they did in the test of creativity administered earlier.

2. Only (24 per cent) were credited by the other members with making the most valuable contributions to the group's performance.

3. Boys tended to demonstrate and explain more principles than girls. But at the fifth-grade level, the girls initiated slightly more ideas than the boys.

Paul Torrance notes that:

> From second through sixth grades we find a decreasing tendency for group members to work alone, especially the most creative ones, rather than as a part of a group. The tendency for the most creative to work alone rather strongly persists through the fifth grade, at which point the tendency for the group to organize begins to emerge as an important technique in controlling the most creative member. By the sixth grade, groups

developed a varied repertoire of controls. The most creative have in turn developed a varied repertoire of techniques of adaptations. (25)

Summary

1) Creativity can be nurtured through creative problem solving situations.

2) Intelligence can not be used as a criteria for creative potentials possessed, as only 20 per cent of the highly intelligent score high in creativity.

3) Findings indicate, teachers scoring high on the Minnesota Teachers Attitude Inventory:

   a. were not as "textbook bound" as teachers scoring low on the same test.

   b. their pupils were better able to use what they had learned in problem solving.

4) Teachers possessing a high control within the classroom discouraged self-initiated pupil talk, verbal creativity and verbal flexibility, but incouraged details in drawings.

5) Students involved in creative acts have a tendency to work along. When working in group situations the more creative student is discriminated against through controls established by the group. The more creative individual in turn develops a variety of techniques in order to adapt to the situation.

The above findings established that creativity is very broad in nature and is significant to the total development of an individual. There are many controlling factors involved which can promote or discourage creativity depending upon the individual, situation or circumstances pertinent to creative development.

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(25) Ibid, pp. 119-136.

CHAPTER III

DESIGN OF STUDY

Introduction

In order to obtain a more complete understanding of the factors influencing creativity, it is essential that an attempt be made, through sampling of creative abilities, to further understand the effect that creativity has upon art education. Through the use of TORRANCE'S TEST OF CREATIVE THINKING, FIGURAL FORM A, this writer will sample creativity at both the teacher and student levels. Using the data to establish a relationship between creativity and art work produced.

Adaptations of the Torrance Test to the Study

It was essential to obtain a test which would sample those characteristics or traits which would provide needed information for such a study. Additional factors which had to be taken into consideration were:

1) test was to be given during the last week of school and the time factor related to school activities determined that the test not exceed more than thirty minutes in testing time.

2) it was essential that the test chosen be easily administered by the teachers and that the instructions would be completely understood by both the teacher and student.

3) tests should be easily scored.

4) it was essential to obtain a test which could be termed valid.

The reasons for selection of Torrance Test of Creativity, Figural Form A, was that it met all requirements for this sampling. In content validity, a consistent and deliberate effort has been made to base the test stimuli, test tasks, instructions and scoring procedures on the best theory and research now available.

Upon selection of this test, a letter of permission was sent to Personnel Press, Inc., and tests were obtained for the sampling.

Description of the Torrance Test

Through the use of this test this writer was able to sample four areas thought to be significant to creativity in which Torrance describes: (see appendix I)

1) Figural Fluency is significant because it samples a number of activities completed. Scores are useful primarily in helping the user understand the other figural scores. Here the "impulsive", "banal", and even the "non-thinker" can achieve rather easily high scores, even maximum scores within the time limits. Such persons, however, almost always have low Flexibility, Originality, and Elaboration scores. But tied to this result will be the other scores which will give clues concerning which of these alternative explanations is most likely.

2) Flexibility - concerned basically with figural modes of thinking. The subject must return to the same stimulus and each time perceive it in a different way. Usually responses involve a considerable amount of elaboration and give insight as to the varied responses to a stimulus.

3) Originality - interpretation can be derived by looking at the originality score in relation to the fluency and elaboration scores. A person may produce

small number of responses, none or few of which may be original. But then again another person may produce a large number of responses all of which are high in originality. A third person may produce responses of high originality but be unable to, or choose not to, elaborate any of them and still another may produce no original responses but elaborate the unoriginal responses to a high degree. These different kinds of performances represent obviously different kinds of mental functioning.

4) Elaboration - seems among other things to be associated with keeness or sensitivity in observation.

Sample Group

A total of thirteen out of twenty-four secondary art teachers were selected for this study. Permission was obtained from the participants previous to the testing sequence. The selection of the thirteen teachers was determined by the following criteria:

1) the number of tests which could be scored within the alloted time.

2) an equal number of both junior and senior high school art teachers to be involved.

3) a cross-section of schools sampled; within the school district.

These teachers were given the Torrance Figural Form A during a single testing session with the writer administering the test. Upon completion of this testing sequence, the selected teachers were given a package of testing and instructional materials (see Appendix I and II). The teachers individually selected what they considered to be their most creative classes.

Teachers were assigned code letters "A-M". The teachers were identified from their class through a number zero, (0), following the letter identification. Students were numbered one, (1), through the total number of students within each class.

The following points were stressed to each teacher that most examinees would be most anxious to begin their test so questions should be answered as expeditiously as possible before the test sequence in order to permit them to begin work and also utilize the full time limit. Another important factor was that the time limit should be followed as closely as possible in order to obtain a reliable raw score. Each teacher was instructed that if some examinees were upset by the fact that they did not finish, they were to reassure them very simply by saying the following:

> "I noticed that you work in different ways. some of you finish all of your drawings very quickly and then went back and added other ideas. Some of you finished only a few of the drawings but you made each of them tell a very complete story. Continue to work in whatever way is natural and comfortable for you." (26)

The test was administered during the last week of school and allowed one day for the testing sequence. If students were absent during the testing period they did not participate.

Evaluating Procedures

The process of obtaining data from the Torrance Figural Form A was through a team of five evaluators. This team was selected from

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(26) Torrance, Paul --- "DIRECTIONAL MANUAL" 1966, p. 7.

all levels within the area of art education, evaluators were:

Evaluator 1 --- Art Supervisor

Evaluator 2 --- University of Art Instructor

Evaluator 3 --- Artistic Housewife

Evaluator 4 --- Elementary Art Helping Teacher

Evaluator 5 --- University Student

Each evaluator was provided a complete copy of TORRANCE TESTS OF CREATIVE THINKING, DIRECTIONS MANUAL AND SCORING GUIDE, (FIGURAL FORM BOOKLET A, RESEARCH EDITION). All scoring of tests was directly related to the instruction within the manual.

The evaluators were provided the tests for evaluation and the scores from these tests were placed on a Torrance Scoring sheet along with personnel data obtained from the test cover (see Appendix III). Upon receiving scored tests and corresponding score sheets, the information was transferred to a score summary sheet (see Appendix IV). This sheet was comprised of raw-average, mean scores tabulated from the five evaluator scores within the four categories of creativity.

The raw data obtained from the summary sheets was computed to obtain the following:

1. group mean (group A, B, C)
2. total student mean
3. deviation of each student from the total student group mean
4. standard deviation within the total group
5. T-scores for each student

A similar procedure was followed for the teacher test group. The data obtained from the evaluations was tabulated by this writer. An analysis of this data can be found within Tables VI through XVIII in the next chapter.

Ranking of High Schools

In order to relate the data obtained from the creativity test scores to the quality of art work produced, three high schools were ranked within the following ten areas of two-dimensional art work:

1. Knowledge of material
2. Use of material
3. Knowledge of composition (elements of design)
4. Use of composition (elements of design)
5. Variety of approaches to media
6. Originality of art work
7. Freedom of expression
8. Completeness of visual statement
9. General impact of art work
10. Display of art work (matting, framing, etc.)

The reason for evaluating two-dimensional art work within the high school art programs was due to the fact that all three schools evaluated had art exhibits during the same period of time and two-dimensional work was the most prevalent exhibited.

The ten areas were numerically ranked from high to low as follows:

1 = low
2 = below average
3 = average
4 = above average
5 = excellent

The ranking procedure was performed by a three-member team of qualified public school and university art personnel. In an

effort to reduce bias, the art programs were ranked by persons other than this writer.

The ranking of art work, per school, was completed prior to the testing of creativity and rank scores were tabulated on a High School Student Art Work Evaluation Sheet (see Appendix V).

Analysis of the Data

The data obtained from the TORRANCE TEST OF CREATIVE THINKING, FIGURAL FORM A, was computed in T-scores and analogies were drawn from both the teacher and students. Correlation was attempted between the creative potentials of both the teacher and students and the qualities of art work produced.

CHAPTER IV

RESULTS OF THE STUDY

Conclusions and discussion presented within this chapter are based on the data tabulated from School Evaluations and the Torrance Test of Creativity, Figural Form A.

Definition of Terms Used in this Study

Reliability - measures the consistency with which a person, a test, or the scoring procedure maintains his position within a group from measurement to measurement.

Validity - defined as the degree to which a measuring instrument actually serves the purpose for which it is intended. (Does it sample what it was intended to sample?)

T-Score - data projected into a linear transformation with a arithmetic mean of 50 and a standard deviation of 10 with all scores positive.

Rank Order - placement of individuals or groups according to merit of the position they displayed according to their excellence.

Mean - the measure of central tendency.

Coefficient of Correlation - the number representing the straight-line relationship between the values of variables, such as the values of the two variables resulting from double measurement of the students and teachers within this study.

Analysis of the School Evaluation

Prior to the testing sequence, a team of three evaluators evaluated student art work in three high school art programs, using a form designed by this writer (see Appendix V). The results of data obtained from this evaluation is presented in Table #1.

TABLE #1

MEAN RANK SCORES OF THE AVERAGE RANK SCORES PER EVALUATOR, PER SCHOOL FOR THREE HIGH SCHOOL ART PROGRAMS, IN TEN AREAS OF THE ART PROGRAM

	HIGH SCHOOL #1					HIGH SCHOOL #2					HIGH SCHOOL #3				
	Evaluator 1	Evaluator 2	Evaluator 3	Total Rank Score	Average Mean Rank Score	Evaluator 1	Evaluator 2	Evaluator 3	Total Rank Score	Average Mean Rank Score	Evaluator 1	Evaluator 2	Evaluator 3	Total Rank Score	Average Mean Rank Score
1. Knowledge of material	4	5	4	13	4.3	3	4	4	11	3.6	3	4	4	11	3.6
2. Use of material	4	5	5	14	4.6	3	4	5	12	4.0	3	4	5	12	4.0
3. Knowledge of composition (Elements of Design)	4	4	3	11	3.6	4	3	3	10	3.3	4	3	3	10	3.3
4. Use of composition (Elements of Design)	4	4	3	11	3.6	4	3	4	11	3.6	4	3	3	10	3.3
5. Variety of approaches to media	4	5	4	13	4.3	4	4	4	12	4.0	4	3	4	11	3.6
6. Originality of art work	5	4	2	11	3.6	2	3	4	9	3.0	3	3	4	10	3.3
7. Freedom of expression	5	5	2	12	4.0	2	5	4	11	3.6	3	4	4	11	3.6
8. Completeness of visual statement	4	4	3	11	3.6	4	4	5	13	4.3	3	3	5	11	3.6
9. General impact of art work	4	5	2	11	3.6	4	4	4	12	4.0	4	3	4	11	3.6
10. Display of art work (Frames, matting, etc.)	5	3	5	13	4.3	3	3	4	10	3.3	3	3	3	9	3.0

Major Findings of Table #1

After establishing the mean of the rank scores, no school obtained rank scores higher than four, (4) or lower than three, (3). Thus, all high school student art work evaluated ranked between average and above average. Each school displayed a minimal difference in rank score.

School #1

School #1 scored above average in the use of materials, variety of approaches to media, freedom of expression and display of art work. All other scores for School #1 ranked between average and above average.

School #2

School #2 ranked above average in use of materials, variety of approached to media, completeness of visual statement and general impact of art work. All other areas ranked between average and above average.

School #3

School #3 ranked above average in one of the ten areas; use of materials. The nine remaining areas ranked between average and above average.

Analysis of the Creativity Test

To determine the creative potentials of both the teachers and students, TORRANCES TEST OF CREATIVITY (FIGURAL FORM A) was administered. A total of sixty-eight, (68), students and thirteen, (13), teachers were used for this study.

Evaluators Reliability

A coefficient correlation of reliability could not be established for the evaluators. In order to establish a relationship between evaluators a rank system was used (see Table II).

This table uses the total deviation from the means of the five evaluators, per evaluation over the total sample population. A score of number One, (1), indicates the closest relationship to the mean. And number five, (5), being furthest from the mean. Column five within Table II indicates the rank order of each evaluator.

TABLE II

RANK ORDER TABLE OF EVALUATORS IN SCORING OF FIGURAL FORM A BASED ON DEVIATION FROM MEAN SCORE PER EVALUATION ON ALL TESTS EVALUATED

	Fluency	Flexibility	Originality	Elaboration	Rank Position
Evaluator #1	2	3	1	1	1.75
Evaluator #2	1	4	3	5	3.25
Evaluator #3	5	2	5	2	3.50
Evaluator #4	3	1	2	4	2.50
Evaluator #5	4	5	4	3	4.00

An analysis of Table II shows that evaluator one, (1), was closest to the mean per evaluation on all tests scored. Therefore evaluator one, (1), was used as the experienced scorer to correlate each of the other evaluators. Correlations are presented in Table III.

TABLE III

COEFFICIENT OF CORRELATION OF RELIABILITY BETWEEN EVALUATORS USING EVALUATOR #1 AS THE EXPERIENCED SCORER

	Coefficient of Correlation in			
	Fluency	Flexibility	Originality	Elaboration
Evaluator #2	.80	.96	.83	.95
Evaluator #3	.95	.99	.72	.50
Evaluator #4	.97	.99	.91	.56
Evaluator #5	.99	.82	.93	.64

Major Findings in Table III

Fluency
The score of Evaluator Two, (2), is below .90 but in averaging the four scores a reliability coefficient of .927 was obtained among the average of the four evaluators.

Flexibility
The score of Evaluator Five, (5), is below .90 but in averaging the four scores a total reliability coefficient of .94 was obtained among the four evaluators.

Originality
The score of Evaluator Two, (2), is below .90 and the scores of Evaluator Three, (3), is below .80 but in averaging the four scores a total reliability coefficient of .897 was obtained.

Elaboration
Evaluator Two, (2), scored above .90 and the two remaining evaluators scores are far too low to make the elaboration scores within the test reliable. Therefore elaboration scores cannot be utilized because of its low reliability factor.

Torrance states that in order to have a valid test, the correlation in scoring should be above .90.

The Correlation Between Teachers and Students

A coefficient correlation was established between the group of thirteen teachers and each of one of their classes for a total of thirteen teachers and sixty-eight students sampled. See Table IV.

TABLE IV

PEARSON R - COEFFICIENT OF CORRELATION FOR FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION FOR (FIGURAL FORM A) BASED ON THE TEACHERS AND STUDENTS SAMPLED

	Fluency	Flexibility	Originality	Elaboration
Coefficient of Correlation	+.24	+.27	+.11	+.38

Major Findings in Table IV

1. All scores within the four categories exhibited a low correlation.
2. The elaboration score is not reliable.

The Correlation Between a Teacher and His Students

a separate coefficient of correlation factor between the teacher and his or her students was attempted but could not be established because a single sampling and no comparable scores to correlate with were available. In order to establish an alternative method to achieve a correlation, a rank order of relationships was utilized. The rank order table of correlation places the thirteen teachers from a high score to a low score. Each teacher's class was put in relationship to the teacher's score (see Appendix VI). Summary of Appendix VI is shown in Table V.

TABLE V

SUMMARY OF TABLE OF COMPARISON BY T-SCORE OF TEACHERS AND STUDENTS OF TEACHER FOR FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION (FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
Coefficient of Correlation	+.08	+.35	-.10	+.11

Major Findings

1. Originality scores indicate a very low reverse or negative correlation and are not significant.

2. Fluency, flexibility and elaboration scores all indicate a low to very low positive correlation and not significant.

Analysis of Teacher and Corresponding Student Groups

Teacher and student groups were tabulated separately into two sets of T-scores within the four areas sampled.

A relationship between the T-scores of the teacher and the corresponding student groups are available in Tables VI through XVIII.

Teacher A

Teacher Data .... Two years of teaching experience
B. S. Degree
Masters Degree

TABLE VI

TABLE OF COMPARISON BY T-SCORE OF TEACHER "A"
AND STUDENTS OF TEACHER "A" FOR
FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION
(FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
A 0	59	49	56	39
A 1	45	38	41	49
A 2	41	44	41	42
A 3	49	43	52	46
A 4	53	54	43	40
Students average mean T-scores	47	45	44	44

Major Findings

1. In the area of fluency, Teacher "A" scored 20% higher than the average of his students.

2. In the area of flexibility, this teacher scored 8% higher than the average of his students.

3. In the area of originality, the teacher scored 22% higher than the average of his students.

4. In elaboration, the teacher scored 13% lower than the average of his students.

Note

The elaboration score is not reliable (see Table III).

Teacher B

Teacher Data .... Seven years of teaching experience
B. S. Degree

TABLE VII

TABLE OF COMPARISON BY T-SCORE OF TEACHER "B"
AND STUDENTS OF TEACHER "B" FOR
FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION
(FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
B 0	60	47	58	44
B 1	47	38	36	39
B 2	46	43	42	53
Students average mean T-scores	47	41	39	46

Major Findings

1. In the area of fluency, Teacher "B" scored 22% higher than the average of his students.

2. In the area of flexibility, this teacher scored 13% higher than the average of his students.

3. In the area of originality, the teacher scored 335 higher than the average of his students.

4. In elaboration, the teacher scored 5% lower than the average of his students.

Note

The elaboration score is not reliable (see Table III).

Teacher C

Teacher Data .... Ten years of teaching experience
B. S. Degree
Six credits

TABLE VIII

TABLE OF COMPARISON BY T-SCORE OF TEACHER "C" AND STUDENTS OF TEACHER "C" FOR FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION (FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
C 0	39	32	41	40
C 1	44	44	43	45
C 2	49	53	42	49
C 3	53	60	50	68
C 4	47	50	49	45
Students average mean T-scores	48	52	46	51

Major Findings

1. In the area of fluency, Teacher "C" scored 23% lower than the average of his students.

2. In the area of flexibility, this teacher scored 63% lower than the average of his students.

3. In the area of originality, the teacher scored 12% lower than the average of his students.

4. In elaboration, the teacher scored 28% lower than the average of his students.

Note

The elaboration score is not reliable (see Table III).

Teacher D

Teacher Data .... Five years of teaching experience
B. S. Degree
Masters Degree
Eighteen credits post M. A.

TABLE IX

TABLE OF COMPARISON BY T-SCORE OF TEACHER "D"
AND STUDENTS OF TEACHER "D" FOR
FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION
(FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
D 0	54	51	53	65
D 1	52	56	47	53
D 2	58	61	54	49
D 3	43	43	42	41
D 4	46	46	41	41
D 5	36	35	59	48
D 6	54	62	48	59
D 7	45	47	49	53
Students average mean T-scores	48	50	49	49

Major Findings

1. In the area of fluency, Teacher "D" scored 11% higher than the average of his students.

2. In the area of flexibility, this teacher scored 2% higher than the average of his students.

3. In the area of originality, the teacher scored 8% higher than the average of his students.

4. In elaboration, the teacher scored 25% higher than the average of the students.

Note

The elaboration score is not reliable (see Table III).

Teacher E

Teacher Data .... Eight years of teaching experience
B. S. Degree
Masters Degree

TABLE X

TABLE OF COMPARISON BY T-SCORE OF TEACHER "E"
AND STUDENTS OF TEACHER "E" FOR
FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION
(FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
E 0	38	44	39	52
E 1	34	33	37	41
E 2	47	49	49	58
E 3	62	63	63	81
E 4	51	55	46	53
E 5	41	42	40	67
E 6	53	56	50	49
Students average mean T-scores	48	50	48	58

Major Findings

1. In the area of fluency, Teacher "E" scored 26% lower than the average of his students.

2. In the area of flexibility, this teacher scored 14% lower than the average of his students.

3. In the area of originality, the teacher scored 23% lower than the average of his students.

4. In elaboration, the teacher scored 15% lower than the average of his students.

Note

The elaboration score is not reliable (see Table III).

Teacher F

Teacher Data .... Eighteen years of teaching experience
B. S. Degree
Masters Degree
One Hundred and Fourteen Credits post M. A.

TABLE XI

TABLE OF COMPARISON BY T-SCORE OF TEACHER "F"
AND STUDENTS OF TEACHER "F" FOR
FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION
(FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
F 0	45	50	42	68
F 1	42	42	46	53
F 2	36	35	37	33
F 3	41	41	39	42
F 4	42	43	43	48
F 5	42	46	46	53
Students average mean T-scores	41	41	42	46

Major Findings

1. In the area of fluency, Teacher "F" scored 9% higher than the average of his students.

2. In the area of flexibility, this teacher scored 18% higher than the average of his students.

3. In the area of originality, the teacher and students scored identical.

4. In elaboration, the teacher scored 3% higher than the average of his students.

Note

The elaboration score is not reliable (see Table III).

Teacher G

Teacher Data .... Seventeen years of teaching experience
B. S. Degree
Masters Degree

TABLE XII

TABLE OF COMPARISON BY T-SCORE OF TEACHER "G"
AND STUDENTS OF TEACHER "G" FOR
FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION
(FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
G 0	50	54	51	62
G 1	49	46	50	55
G 2	61	57	62	48
G 3	73	71	87	52
G 4	51	49	55	54
G 5	72	71	78	61
G 6	64	60	63	67
G 7	74	68	64	78
Students average mean T-scores	63	60	61	59

Major Findings

1. In the area of fluency, Teacher "G" scored 26% lower than the average of his students.

2. In the area of flexibility, this teacher scored 11% lower than the average of his students.

3. In the area of originality, the teacher scored 20% lower than the average of his students.

4. In elaboration, the teacher scored 11% higher than the average of his students.

Note

The elaboration score is not reliable (see Table III).

Teacher H

Teacher Data .... Twenty-four years of teaching experience
B. S. Degree

TABLE XIII

TABLE OF COMPARISON BY T-SCORE OF TEACHER "H"
AND STUDENTS OF TEACHER "H" FOR
FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION
(FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
H 0	65	68	73	42
H 1	51	56	51	43
H 2	70	71	65	47
H 3	61	56	57	45
H 4	46	43	48	40
H 5	73	60	68	46
H 6	65	60	65	59
H 7	48	43	42	43
Students average mean T-scores	59	56	56	47

Major Findings

1. In the area of fluency, Teacher "H" scored 6% higher than the average of his students.

2. In the area of flexibility, this teacher scored 18% higher than the average of his students.

3. In the area of originality, the teacher scored 23% higher than the average of his students.

4. In elaboration, the teacher scored 12% lower than the average of his students.

Note

The elaboration score is not reliable (see Table III).

Teacher I

Teacher Data .... Five years of teaching experience
B. S. Degree
Masters Degree
Four credits post M. A.

TABLE XIV

TABLE OF COMPARISON BY T-SCORE OF TEACHER "I"
AND STUDENTS OF TEACHER "I" FOR
FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION
(FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
I 0	54	59	47	50
I 1	59	46	51	65
I 2	46	49	50	40
I 3	61	60	54	61
I 4	61	60	56	46
Students average mean T-scores	57	54	50	53

Major Findings

1. In the area of fluency, Teacher "I" scored 6% lower than the average of his students.

2. In the area of flexibility, this teacher scored 10% higher than the average of his students.

3. In the area of originality, the teacher scored 6% lower than the average of his students.

4. In elaboration, the teacher scored 6% lower than the average of his students.

Note

The elaboration score is not reliable (see Table III).

Teacher J

Teacher Data .... Thirty-two years of teaching experience
B. S. Degree
Masters Degree
Forty-eight credits post M. A.

TABLE XV

TABLE OF COMPARISON BY T-SCORE OF TEACHER "J"
AND STUDENTS OF TEACHER "J" FOR
FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION
(FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
J 0	57	53	62	49
J 1	48	49	44	40
J 2	39	35	38	40
J 3	67	66	70	56
J 4	43	45	44	56
J 5	36	32	38	37
J 6	40	41	40	55
J 7	51	53	49	48
J 8	46	50	41	50
Students average mean T-scores	46	46	46	48

Major Findings

1. In the area of fluency, Teacher "J" scored 18% higher than the average of his students.

2. In the area of flexibility, this teacher scored 13% higher than the average of his students.

3. In the area of originality, the teacher scored 26% higher than the average of his students.

4. In elaboration, the teacher scored 2% higher than the average of his students.

Note

The elaboration score is not reliable (see Table III).

Teacher K

Teacher Data .... Twelve years of teaching experience
B. S. Degree
Masters Degree
Six credits post M. A.

TABLE XVI

TABLE OF COMPARISON BY T-SCORE OF TEACHER "K"
AND STUDENTS OF TEACHER "K" FOR
FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION
(FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
K 0	38	42	39	55
K 1	54	54	57	38
K 2	53	54	48	42
K 3	34	33	37	35
K 4	59	66	57	44
Students average mean T-scores	50	52	50	40

Major Findings

1. In the area of fluency, Teacher "K" scored 32% lower than the average of his students.

2. In the area of flexibility, this teacher scored 24% lower than the average of his students.

3. In the area of originality, the teacher scored 28% lower than the average of his students.

4. In elaboration, the teacher scored 27% higher than the average of his students.

Note

The elaboration score is not reliable (see Table III).

Teacher L

Teacher Data .... Three years of teaching experience
B. S. Degree

TABLE XVII

TABLE OF COMPARISON BY T-SCORE OF TEACHER "L"
AND STUDENTS OF TEACHER "L" FOR
FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION
(FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
L 0	29	39	37	34
L 1	38	37	43	47
L 2	55	51	52	50
L 3	48	45	47	43
L 4	47	44	48	64
L 5	38	38	45	52
L 6	39	38	48	45
Students average mean T-scores	44	42	47	50

Major Findings

1. In the area of fluency, Teacher "L" scored 52% lower than the average of his students.

2. In the area of flexibility, this teacher scored 8% lower than the average of his students.

3. In the area of originality, the teacher scored 27% lower than the average of his students.

4. In elaboration, the teacher scored 47% lower than the average of his students.

Note

The elaboration score is not reliable (see Table III).

Teacher M

Teacher Data .... Three years of teaching experience
B. S. Degree

TABLE XVIII

TABLE OF COMPARISON BY T-SCORE OF TEACHER "M"
AND STUDENTS OF TEACHER "M" FOR
FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION
(FIGURAL FORM A)

	Fluency	Flexibility	Originality	Elaboration
M 0	62	65	52	48
M 1	43	46	40	36
M 2	41	41	42	68
M 3	50	51	44	45
M 4	45	46	45	74
Students average mean T-scores	45	46	43	56

Major Findings

1. In the area of fluency, Teacher "M" scored 26% higher than the average of his students.

2. In the area of flexibility, this teacher scored 29% higher than the average of his students.

3. In the area of originality, the teacher scored 16% higher than the average of his students.

4. In elaboration, the teacher scored 17% lower than the average of his students.

Note

The elaboration score is not reliable (see Table III).

In order to procure a more graphic relationship, Table XIX was designed, encompassing the four areas of creativity (fluency, flexibility, originality, elaboration). Teacher's scores were listed in rank order from high to low in each of the four areas and the teacher's average student group scores were listed alongside the teacher's score. Two factors significant to Table XIX are:

1) A line has been established below at the mean T-Score of 50 in order to divide the above average and the below average teacher scores.
2) Starred teachers and student scores indicate high school, (tenth through twelfth grades), ranking in relationship to the junior high school scores not starred.

TABLE XIX

RANKING OF TEACHERS BY T-SCORES FOR FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION FROM HIGH OF #1 TO LOW OS #13 WITH THE AVERAGE MEAN T-SCORE OF TEACHER'S STUDENTS GROUPS IN ANALOGY

	FLUENCY		FLEXIBILITY		ORIGINALITY		ELABORATION	
	Teacher	Student	Teacher	Student	Teacher	Student	Teacher	Student
1.	H-65	H-59	H-68	H-56	H-73	H-56	*F-68	*F-46
2.	M-62	M-45	M-65	M-46	J-62	J-46	*D-65	*D-49
3.	*B-60	*B-47	I-59	I-53	*B-58	*B-39	G-62	G-59
4.	*A-59	*A-47	G-54	G-60	*A-56	*A-44	K-55	K-40
5.	J-57	J-46	J-53	J-46	*D-53	*D-49	*E-52	*E-58
6.	*D-54	*D-48	*D-51	*D-50	M-52	M-43	I-50	I-53
7.	I-54	I-57	*F-50	*F-41	G-51	G-61	J-49	J-48
8.	G-50	G-63	*A-49	*A-45	I-47	I-50	M-48	M-56
9.	*F-45	*F-40	*B-47	*B-41	*F-42	*F-42	*B-44	*B-46
10.	*C-39	*C-48	*E-44	*E-50	*C-41	*C-46	H-42	H-47
11.	*E-38	*E-48	K-42	K-52	K-39	K-50	*C-40	*C-51
12.	K-38	K-50	L-39	L-42	*E-39	*E-48	*A-39	*A-44
13.	L-29	K-44	*C-32	*C-52	L-37	L-47	L-34	L-50

Major Findings

Fluency:

1. Eight out of thirteen teachers scored above the mean T-score of 50, whereas only four of the thirteen student group average mean score was above the mean T-score of 50.

2. Of the eight teachers scoring above the average mean T-score only three or 37.5% of their students scored simularly.

3. Five teachers scored below the mean T-score of 50, four or 80% of the student groups scored higher or above the teacher score. At the same time the students did not score above the mean T-score 50.

4. Of the six senior high art teachers evaluated, only three scored above the mean T-score of 50.

5. Of the six senior high student groups evaluated, none scored above the mean T-score 50.

6. Of the six senior high teacher and student groups evaluated, only two or 33.3% of the student groups scored above the teachers score.

Flexibility:

1. Seven of the thirteen teachers scored above the mean T-score of 50, with the same number of student groups scoring above same mean T-score.

2. Of the seven teachers scoring above the average mean T-score, only four or 57.1% of their students scored the same.

3. Of the six teachers scoring below the mean T-score of 50, five or 71.5% of their student groups average scores scored higher or above the teachers score. Two of the student groups scored above the mean T-score of 50.

4. Of the six senior high art teachers evaluated, only two scored slightly above the mean T-score of 50.

5. Of the six senior high student groups, three scored slightly above the mean score of 50.

6. Of the four senior high school art teachers scoring below the mean T-score of 50, only two scored slightly above the mean T-score of 50.

7. Of the six senior high teachers and student groups evaluated, only two or 33.3% of the student groups scored above the teacher's score.

Originality:

1. Seven of the thirteen teachers scored above the mean T-score of 50, with only four of the thirteen student groups scoring above the mean T-score of 50.

2. Of the seven teachers scoring above the average mean T-score, only two or 18.5% of their students scored similarly.

3. Of the six teachers scoring below the mean T-score of 50, one of the student groups had identical scores with the teacher. Five or 83.3% of the student groups scored above the teachers score, with two student groups above the mean T-score of 50.

4. Of the six senior high art teachers evaluated, three scored above the mean T-score of 50.

5. Of the six senior high student groups scored, none scored above the mean T-score of 50.

6. Of the six senior high art teachers and their student groups, one group scored identical with the teachers and two groups or 33.3% scored above teacher scores.

Elaboration:

1. Due to the insufficiency of reliability within the elaboration sequence of the test, no relationship can be established.

Conclusion

1) Teacher's years of experience have little or no relationship to the creative potentials sampled.

2) Teachers having masters degree and/or additional credits beyond the Baccalaureate did not perform at a higher level.

3) The samplings from the test provided indications as to the creative potential of each teacher and each student tested. However, statistical analysis clearly shows, if it can be assumed that the reliability of the scores are dependable, that the creative potential of the teacher is not directly related to the creative potential of the student and the quality of art work produced in the art program.

CHAPTER V

SUMMARY AND CONCLUSIONS

Purpose of Study

The purpose of this study was to examine possible relationships between the creative levels of the teachers and the creative levels of the students as measured by the TORRANCE TEST OF CREATIVE THINKING, FIGURAL FORM A. The purpose was to determine if the creative levels of both the teachers and students were significantly related and have an effect upon the qualities of the student art work produced.

Theoretical Dimension and Limitations

It was theorized that the creative potential ability possessed by the teachers may be reflected in the creative production of the students.

Design of Study

Prior to the testing procedure, student art work in three high schools, involving six teachers was evaluated within ten areas of two-dimensional art work by a team of three evaluators, in order to determine the qualities of the art work produced within the art programs.

During the last week of school, thirteen teachers and one of their classes participated in the TORRANCE TEST OF CREATIVITY, FIGURAL FORM A.

Upon completion of the tests, the tests were scored by a five member team using the Torrance Tests of Creative Thinking, (Directions Manual and Scoring Guide) Figural Test Booklet A, Research Edition.

Conclusion and Recommendations

The findings were based on the results of the form QUALITIES OF STUDENT ART WORK (see Appendix VII). The three art programs in the three high schools ranked very close in all ten areas, averaging between 3.4 and 3.9, on a 5 point scale, indicating above average art programs.

The findings based on the results of Torrance Test of Creativity, (Figural Form A) established that a relationship between teachers scoring at the upper and lower ends of the T-score scale have little or no relationship to the scores of the students. Teachers scoring close to the mean T-score of 50 have a closer relationship with their student scores.

The six high school art teachers and their classes ranked equally above and equally below the mean T-score of 50.

Based on the findings obtained from both the QUALITIES OF THE ART PROGRAM and TORRANCE'S TEST OF CREATIVITY, the objectives did not correlate. The data indicated that the creative potentials of both the teacher and student did not reflect the quality of the art program. Therefore other unknown factors must have affected the art program.

The Author's Conclusions

The results of this study are significant to the writer even though the results obtained do not reflect upon the qualities of the art program.

This study was restricted, using only one test which sampled a small segment of the teacher-student population. In order to obtain more conclusive results, and to establish more significant findings, one would have to sample other facets pertinent to creativity and the production of creative works at both the teacher and student levels. Factors which are related, although impossible to sample, are personal qualities such as:

1) Individual enthusiasm on the part of the teacher and student.

2) Values placed upon individual development by the teacher.

3) The ability of the teacher to translate the personal language of art into linquistics that his students can discover at their particular developmental level.

4) The encouragement the teacher's emphasize to his students for self-discovery through media exploration, subject search, learning to evaluate and knowing what to look for in art.

From the findings obtained it can be established that the number of years of teaching experience or the educational status of the teacher are not factors significant to a quality art program.

Recommendations for Further Study

A number of implications for further study have developed during the study and preparation of this paper.

1. This was a small sampling based on a single test. Further and more elaborate studies may indicate a higher correlation.

2. This sample was small, but sampled students who had contact with a teacher for a minimum of one semester. A larger sample could produce different results.

3. In order to obtain more conclusive results a pre-test and post-test should be executed in order to sample any changes significant to creativity between testing dates.

4. There is a need to discover more effective means of sampling and scoring creativity at all levels of education. Further study should be established at all levels and areas of education.

5. In order to obtain a more universal and complete study, a correlation should be established between the mental age, chronological age, intelligence quotient, and creative potentials.

6. Further study would be relevant considering environmental levels of individuals (monetary, race, geographical locations, etc.).

7. Further study could correlate creative potentials in different subject areas at all levels of education.

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APPENDIX

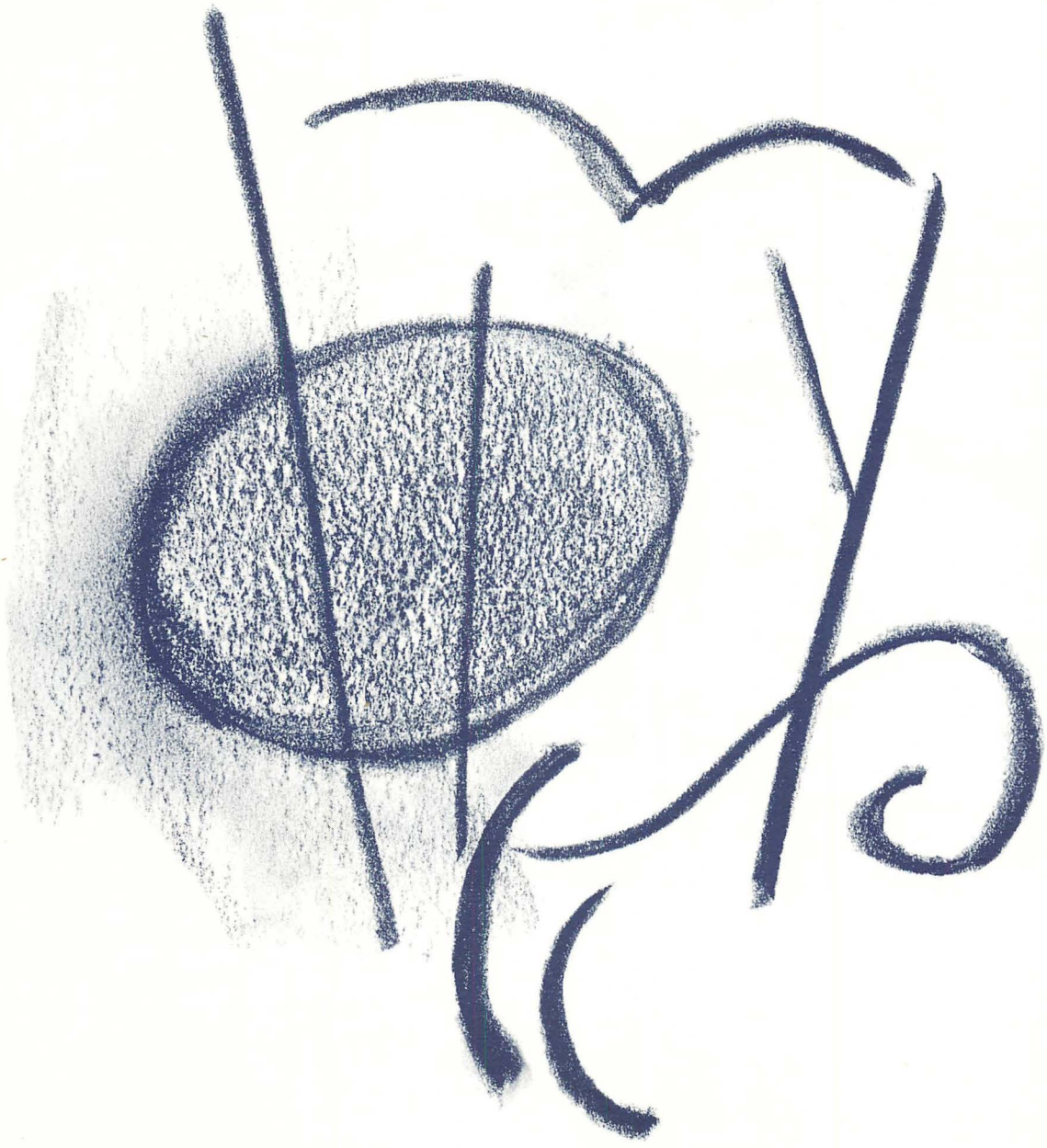
Thinking Creatively With Pictures

By E. Paul Torrance

Booklet A

Name _____ Age _____ Sex _____ Grade _____

School _____ City _____ Date _____



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YOUR TITLE:_____

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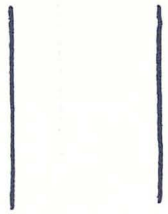

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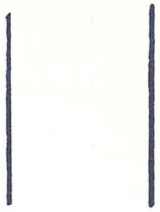

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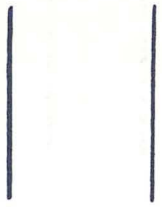

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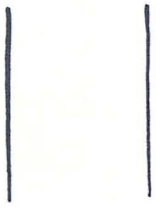

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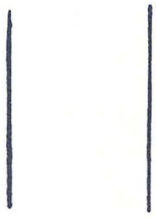

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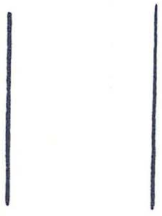

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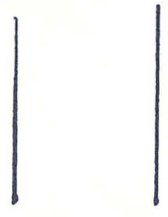

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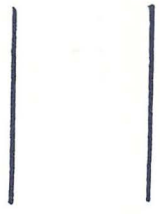

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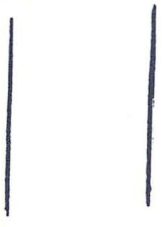

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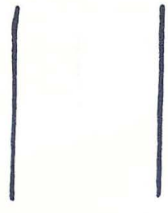

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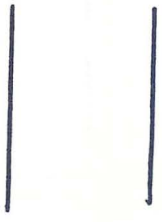

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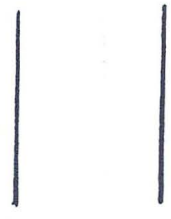

18._____

GO ON TO NEXT PAGE

APPENDIX II

TEST INSTRUCTIONS

(Please read the following instructions before administering the test)

Pass out the booklets and have each individual fill in the blanks at the top of page one quite carefully. have each student check his test making sure there are eight pages to the test - the cover is page one. Chances are there may be more than needed and if this should occur---remove extra pages and return them with the completed tests.

After the identifying information on page one has been provided, read these instructions to the students: (All statements in caps should be read to the students in proper sequence of testing).

> IN THIS BOOKLET ARE THREE INTERESTING THINGS FOR YOU TO DO. ALL OF THEM WILL GIVE YOU A CHANCE TO USE YOUR IMAGINATION TO THINK OF IDEAS AND TO PUT THEM TOGETHER IN VARIOUS WAYS. IN EACH ACTIVITY, WE WANT YOU TO THINK OF THE MOST INTERESTING AND UNUSUAL IDEAS YOU CAN -- IDEAS THAT NO ONE ELSE IN THIS GROUP WILL THINK OF. AFTER YOU THINK OF AN IDEA KEEP ADDING TO IT AND BUILD IT UP SO THAT IT WILL TELL THE MOST INTERESTING AND EXCITING STORY POSSIBLE.
>
> YOU WILL BE GIVEN A TIME LIMIT ON EACH ACTIVITY, SO MAKE GOOD USE OF YOUR TIME. WORK FAST BUT DON'T RUSH. TRY TO KEEP THINKING OF IDEAS, BUT IF YOU RUN OUT OF IDEAS BEFORE TIME IS CALLED SIT QUIETLY AND WAIT UNTIL YOU ARE TOLD TO TURN TO THE NEXT PAGE.
>
> IF YOU HAVE ANY QUESTIONS AFTER WE START, DON'T SPEAK OUT LOUD. RAISE YOUR HAND AND I SHALL COME TO YOUR DESK AND TRY TO ANSWER YOUR QUESTIONS.

If there are no questions at this point, proceed with the first activity. If there are questions concerning the instructions, attempt to satisfy them by repeating the instructions in words that the person will understand or by elaborating upon the instructions in the printed booklet. Avoid giving examples or illustrations of "model responses". This tends to

Using a stop watch, allow TEN MINUTES before calling time. Ask the group to turn to page 4, Activity 2, PICTURE COMPLETION. Again, ask the group to read the instructions as you read them aloud.

> BY ADDING LINES TO THE INCOMPLETE FIGURES ON THIS AND THE NEXT PAGE, YOU CAN SKETCH SOME INTERESTING OBJECTS OR PICTURES. AGAIN, TRY TO THINK OF SOME PICTURE OR OBJECT THAT NO ONE ELSE WILL THINK OF. TRY TO MAKE IT TELL AS COMPLETE AND AS INTERESTING A STORY AS YOU CAN BY ADDING TO AND BUILDING UP YOUR FIRST IDEA. MAKE UP AN INTERESTING TITLE FOR EACH OF YOUR DRAWINGS AND WRITE IT AT THE BOTTOM OF EACH BLOCK NEXT TO THE NUMBER OF THE FIGURE.
>
> ALL RIGHT, GO AHEAD! YOU WILL HAVE TEN MINUTES.

If some examinees are upset by the fact that they did not finish, reassure them very simply by saying something like the following: "I notice that you work in different ways. Some of you finished all ten of your drawings very quickly and then went back and added other ideas. Some of you finished only a few of the drawings but you made each of them tell a very complete story. Continue to work in whatever way is natural and comfortable for you."

Using a stop watch, allow TEN MINUTES before calling time. Ask the pupils to turn to page 6, Activity 3, LINES. Again, have the group read the instructions as you read them aloud:

> IN TEN MINUTES SEE HOW MANY OBJECTS OR PICTURES YOU CAN MAKE FROM THE PAIRS OF VERTICAL STRAIGHT LINES BELOW AND ON THE NEXT TWO PAGES. THE PAIRS OF STRAIGHT LINES SHOULD BE THE MAIN PART OF WHATEVER YOU MAKE. WITH PENCIL OR BALLPOINT PEN ADD LINES TO THE PAIRS OF LINES TO COMPLETE YOUR PICTURE. YOU CAN PLACE MARKS BETWEEN THE LINES, ON THE LINES, AND OUTSIDE THE LINES--WHEREVER YOU WANT TO IN ORDER TO MAKE YOUR PICTURE. TRY TO THINK OF THINGS THAT NO ONE ELSE WILL THINK OF. MAKE AS MANY DIFFERENT PICTURES OR OBJECTS AS YOU CAN AND PUT AS MANY IDEAS AS YOU CAN IN EACH ONE. MAKE THEM TELL AS COMPLETE AND AS INTERESTING A STORY AS YOU CAN. ADD NAMES OR TITLES IN THE SPACES PROVIDED.
>
> ALL RIGHT, GO AHEAD. YOU HAVE TEN MINUTES.

reduce originality and in some cases it even reduces the number of responses produced. Above all, attempt to maintain a friendly, comfortable, warm relationship with the group.

Ask the class to turn to page 2, Activity 1, PICTURE CONSTRUCTION. Ask those who can to read the instructions with you, continuing as follows:

> BELOW IS A PIECE OF COLORED PAPER IN THE FORM OF A CURVED SHAPE. THINK OF A PICTURE OR AN OBJECT WHICH YOU CAN DRAW WITH THIS PIECE OF PAPER AS A PART. ON THE BACK OF THESE SHAPES IS A GUM ADHESIVE. LOOK.

Examiner demonstrates, holding a test booklet so examinees can watch, how the shape is to be removed from page 2, and the shape affixed to page 3. Examiner should avoid actually placing the shape on page 3 since this could influence the pupils in the positioning of their shapes.

> NOW YOU CAN STICK YOUR COLORED SHAPE WHEREVER YOU WANT IT TO MAKE THE PICTURE YOU HAVE IN MIND. STICK YOURS ON THE NEXT PAGE (page 3) WHERE YOU WANT IT AND PRESS DOWN ON IT. THEN ADD LINES WITH YOUR PENCIL OR PEN TO MAKE YOUR OWN PICTURE.
>
> TRY TO THINK OF A PICTURE THAT NO ONE ELSE WILL THINK OF. KEEP ADDING NEW IDEAS TO YOUR FIRST IDEAN TO MAKE IT TELL AS INTERESTING AND EXCITING STORY AS YOU CAN.
>
> WHEN YOU HAVE COMPLETED YOUR PICTURE, THINK UP A NAME OR TITLE FOR IT AND WRITE IT AT THE BOTTOM OF THE PAGE IN THE SPACE PROVIDED. MAKE YOUR TITLE AS CLEVER AND UNUSUAL AS POSSIBLE. USE IT TO HELP YOU TELL YOUR STORY.
>
> GO AHEAD WITH YOUR PICTURE, MAKING IT DIFFERENT FROM ANYONE ELSE'S AND MAKING IT TELL AS COMPLETE AND AS INTERESTING A STORY AS POSSIBLE. YOU WILL HAVE TEN MINUTES.

Most examinees will be anxious to begin, so answer questions as expeditiously as possible and permit them to begin working. At the end of about nine minutes, pupils who have not yet entered a title for their drawing on the line at the bottom of page 3 may be reminded that they are to do so and encouraged to accomplish it.

Although instructions have indicated that the activity includes three pages and instructions are given to "go on to the next page," some children will not grasp this fact and will ask about it or have to be reminded. This may occur even in testing college students and adults, so be alert to this possibility. Time the Activity very carefully, using a stop watch, if possible.

After TEN MINUTES, call time and collect booklets. If the children were unable to write their own titles or labels, be prepared to interview each child briefly to obtain titles or labels. Otherwise reliable scoring will not be possible.

When all the tests have been collected along with extra pages and extra tests provided, place them in the envelope in which they came. Remove the attached card and tapes from card with teachers name, period of test, etc. and place it in the envelope. Seal the envelope and if tape is needed please use it so the envelope will not open in transit. Send the envelope with its contents to the ART OFFICE, BOARD OF EDUCATION on the very next delivery.

Thank you for your time, cooperation and willingness in this sequence of testing.

SCORING WORKSHEET APPENDIX III

TORRANCE TESTS OF CREATIVE THINKING, FIGURAL FORMS A and B

Pupil's Name _____ Sex _____ Test Date _____

School _____ Age _____ Grade _____ Scorer _____

Form _____

esp. No.	Activity 1		Activity 2			Activity 3		
	Orig.	Elab.	Categ.	Orig.	Elab.	Categ.	Orig.	Elab.
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

SCORE SUMMARY

	FLU	FLEX	ORIG	ELAB
Act. 1	X	X		
Act. 2				
Act. 3				
TOTAL				
T SCORE				

COMMENTS:

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SCORE SUMMARY SHEET

Test_____ Number_____

Sex_____ Age_____ Grade_____

	FLU	FLEX	ORIG	ELAB
E 1				
E 2				
E 3				
E 4				
E 5				
E 6				
Raw Score				
Mean				
Total Score				

APPENDIX V

HIGH SCHOOL ART PROGRAM EVALUATION SHEET

In your visit to the three High School Art Rooms and Art Exhibits I would like to have you evaluate the total "2-D" sequence of art work; be it watercolor, oils, tempera, ink or pencil drawings, etc. What I's looking for is a evaluation of those characteristics which are present in all works of art and the degree to which these items are present within each of the High School Programs. The characteristics to be evaluated are as follows:

	East	Central	Denfeld
1. Knowledge of material.....	____	____	____
2. Use of material.....	____	____	____
3. Knowledge of composition (Elements of Design).	____	____	____
4. Use of composition (Elements of Design).....	____	____	____
5. Variety of approaches to media.....	____	____	____
6. Originality of art work.....	____	____	____
7. Freedom of expression.....	____	____	____
8. Completeness of visual statement.....	____	____	____
9. General impact of art work.....	____	____	____
10. Display of art work (Matting and Framing).....	____	____	____

The evaluation should be made according to the following stale-

1=low, 2=below average, 3=average 4=above average 5=excellent

Viewing time of the exhibits: East High Art Exhibit & Auction (May 14- 6:30-10:00), Denfeld High Art Exhibit and Auction (May 13 - 6:00-9:00), Central High Art Exhibit & Auction (May 18 - 7:00-9:30).

APPENDIX VI

RANK OF TEACHER'S SCORE FROM HIGH OF #1 TO LOW OF #13 WITH TEACHERS STUDENT GROUPS RANKED FROM HIGH OF #1 TO LOW OF #13 FOR FLUENCY, FLEXIBILITY, ORIGINALITY AND ELABORATION FOR THE (FIGURAL FORM A) BASED ON THE THIRTEEN TEACHERS AND THE THIRTEEN TEACHERS STUDENT GROUPS SAMPLED

	FLUENCY				FLEXIBILITY				ORIGINALITY				ELABORATION			
	R1 Teachers	R2 Students	D=(R1-R2)	D^2	R1 Teachers	R2 Students	D=(R1-R2)	D^2	R1 Teachers	R2 Students	D=(R1-R2)	D^2	R1 Teachers	R2 Students	D=(R1-R2)	D^2
1	H 1	H 2	-1.0	1.00	H 1	H 2	-1.00	1.00	H 1	H 2	- 1.0	1.0	F 1	F10.5	-9.5	90.25
2	M 2	M11	-9.0	81.00	M 2	M 8.5	-6.50	42.45	J 2	J 8.5	- 6.5	42.25	D 2	D 7	-5.0	25.00
3	B 3	B 8.5	-5.5	30.25	I 3	I 3	0.00	00.00	B 3	B13	-10.0	100.00	G 3	G 1	+2.0	4.00
4	A 4	A 8.5	-4.5	20.25	G 4	G 1	+3.00	9.00	A 4	A10	- 6.0	36.00	K 4	K13	-9.0	81.00
5	J 5	J10	-5.0	25.00	J 5	J 8.5	3.50	12.25	D 5	D 5	0.0	0.00	E 5	E 2	+3.0	9.00
6	D 6.5	D 6	+ .5	.25	D 6	D 6.5	- .50	.25	M 6	M11	- 5.0	25.00	I 6	I 4	+2.3	4.00
7	I 6.5	I 3	+3.5	12.25	F 7	F12.5	-5.50	30.25	G 7	G 1	+ 6.0	36.00	J 7	J 8	-1.0	1.00
8	G 8	G 1	+7.0	49.00	A 8	A10	-2.00	4.00	I 8	I 3.5	+ 4.5	20.25	M 8	M 3	+5.0	25.00
9	F 9	F13	-4.0	16.00	B 9	B12.5	3.50	12.25	F 9	F12	- 3.0	9.00	B 9	B10.5	-1.5	2.25
10	C10	C 6	+4.0	16.00	E10	E 6.5	+3.50	12.25	C10	C 8.5	+ 1.5	2.25	H10	H 9	+1.0	1.00
11	E11.5	E 6	+5.5	30.25	K11	K 4.5	+6.50	42.25	K11.5	K 3.5	+ 8.0	64.00	C11	C 5	+6.0	36.00
12	K11.5	K 4	+7.7	56.25	L12	L11	+1.00	1.00	E11.5	E 6	+ 5.5	30.25	A12	A12	0.0	0.00
13	L13	L12	+1.0	1.00	C13	C 4.5	+8.50	72.25	L13	L 7	+ 6.0	36.00	L13	L 6	+7.0	49.00
169				322.50				239.00				402.00				325.50

RANK CORRELATION OF +.08

RANK CORRELATION OF +.35

RANK CORRELATION OF -.10

RANK CORRELATION OF +.11